99749-6

25X1

January 7, 1966

25X1

Post Office Box 6788
Fort Davis Station
Washington, D.C. 20020

25X1 Re:

Voucher #1

25X1

I have reviewed and evaluated the time and/or materials claimed, and certify to their reasonableness.

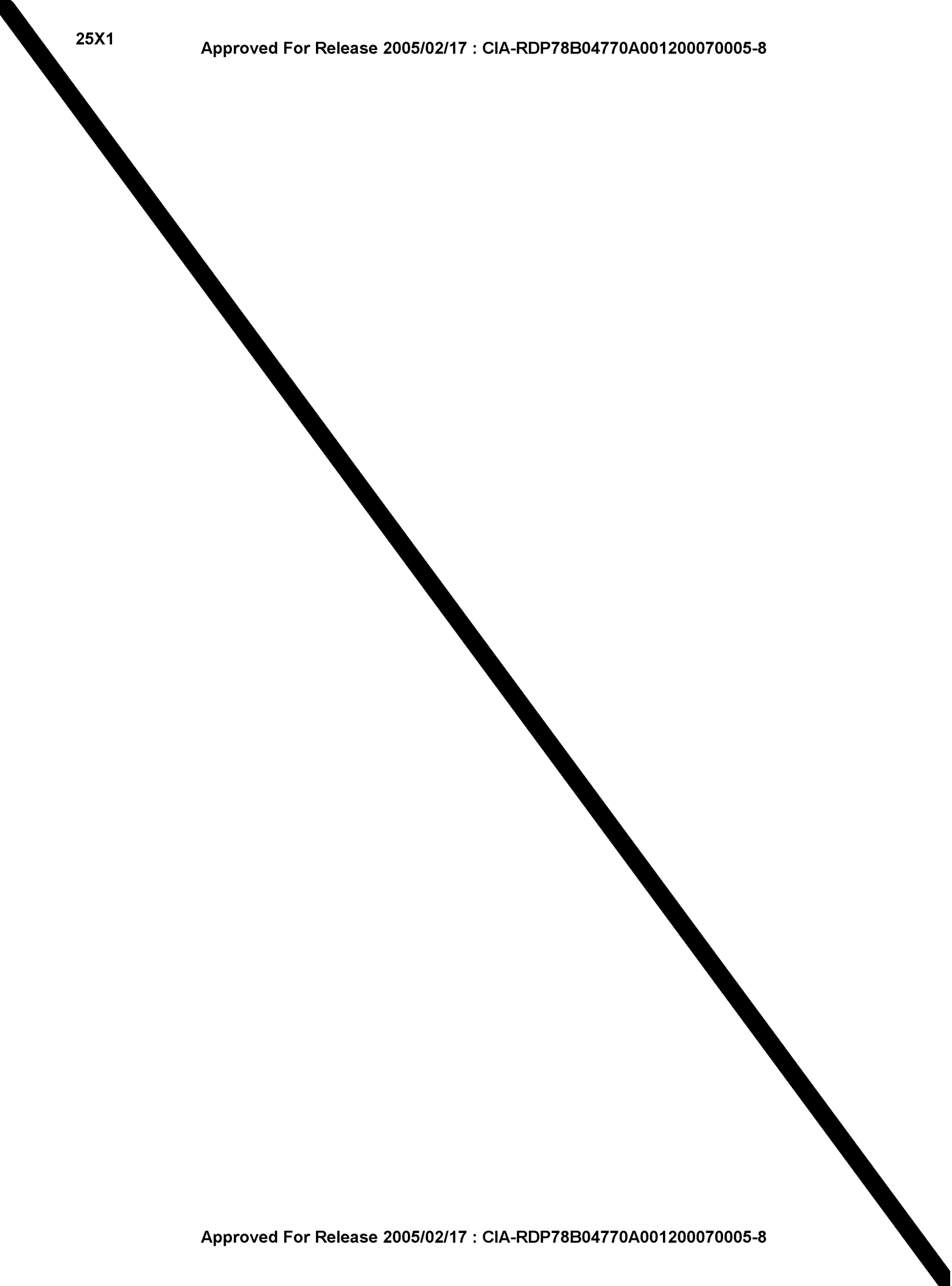
25X1

Technical Monitor

NGA Review Complete

25X1

R&D mgmt
Control Methods —



Approved For Release 2005/02/17 : CIA-RDP78B04770A001200070005-8

P65-6

A PROPOSAL TO DEVELOP RESEARCH AND DEVELOPMENT MANAGEMENT CONTROL METHODS

September 10, 1965

[redacted]

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1.0 SUMMARY

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[redacted] proposes the development of an improved management control system of your research and development program. The R&D effort has grown to the point where more clearly defined and formalized guidelines are necessary to achieve the desired level of efficiency. The analysis proposed will provide management the necessary information with which to reallocate resources and redirect effort in response to changing demands.

The proposed study will define the specific tasks to be performed in managing the research and development program and develop methods for scheduling and controlling each event. A PERT type approach will be used for relating critical events and presenting the information for management review.

The individuals who would perform this study are experienced in both problem analysis and the management of technical projects. They are people who have themselves successfully organized and managed large scale technical programs where performance within time and money constraints was essential. Their experience will be particularly useful in the development of management methods.

2.0 PROBLEM DISCUSSION

The Plans and Development Staff sponsors a substantial research and development effort. During the current fiscal year this effort extends to some 15 different programs, each involving one or more projects. The projects may be performed in-house by staff personnel or outside, by contract. A major portion of the effort is performed in the latter manner.

The magnitude of the contracted R&D projects varies considerably. Within the range of sizes of interest here, the steps to be accomplished in the pre-contract process and the effort required remain essentially the same irrespective of the dollar value of the particular project. Thus, it is more the number of projects than it is the amount of the total budget which contributes to the problems of management.

The magnitude and variety of the total program requires careful and considerate management. The expenditure of funds at the level involved imposes a requirement for both efficiency and effectiveness. Neither can be achieved without considerable organization and planning. However, the press of daily activities stemming from the already ongoing program makes creation of an improved management control system extremely difficult. The individuals who could develop the needed reforms are already fully occupied.

Currently the various projects proceed, more or less, at their own pace and largely independently except for those projects within the same program. For those projects which are performed on contract there are many responsibilities still to be fulfilled internally. Before award of a contract, a number of pre-contract procurement actions must take place. There is a deadline date by which time Fiscal Year funds must be committed or they will be lost. There are also a number of specific tasks which must be accomplished in sequence before a contract can be awarded. Typically these consist of such events as:

1. development of requirements,
2. preparation of specifications or design objectives,
3. issue request for proposal (verbal or formal),
4. receipt of contractor proposal(s),
5. evaluation of proposal(s),
6. TDC approval of proposed project,
7. develop specific statement of work,
8. forward purchase request to Logistics,
9. award contract.

With each of the above events there is a certain time associated so that any one pre-contract effort extends over a period of months. Furthermore, from a practical standpoint each of these events cannot be handled simultaneously for all projects. Efficiency dictates they should be distributed to maintain a uniform workload and avoid queueing as much as possible.

Superimposed upon the pre-contract activity is a requirement to maintain the level of effort on internal studies and monitoring of ongoing contracts from previous years. The events necessary to effective monitoring are not so clearly defined nor intuitively obvious as are the pre-contract tasks. Yet, the contract monitoring duties are every bit as important as are the pre-contract activities. Without effective monitoring the finest design objectives may never be achieved.

In view of the preceeding, it is believed that the effectiveness of the R&D program would be enhanced by creation of a better management control system. The basis for such a system may be found in a definition of the specfic events which must take place and a development of a means for scheduling them to minimize conflict and establish milestones against which progress may be measured. Thus, management would be provided the information necessary to know when and where to reallocate resources and effort to achieve the planned goals.

3.0 METHODOLOGY OF THE STUDY

The study will be divided into two parts. The first part will be concerned with the pre-contract activities and the second will be concerned with the post-award monitoring activities. The pre-contract activities are those which result in an equipment specification necessary for a request for quotation and the post-award activities will assure the center that equipment will have been manufactured to the required standards, in conformance with the specifications and within the contract allowance of time and cost.

Based on past developments, [redacted] will recommend procedures and tasks to be used to produce concrete and realistic specifications. The experience of industry and other government agencies will be used to derive a sequence of tasks which can be charted and scheduled. Methods of time and cost estimation will be recommended for use in charting and scheduling. A system of progress assessment will be recommended by which management can determine how tasks may be changed and resources reallocated to hold to the schedule. 25X1

The following list briefly describes the steps of part one of the study:

Step 1. Determine the sequence of tasks necessary to complete the pre-contract activities using a common terminology which will apply to all development projects.

Step 2. Evaluate the sequence of tasks, adding, modifying, or deleting as advisable, using the experience of other R&D managers and their plans and methods.

Step 3. Determine milestones, i.e., significant in-progress or end point outputs from each task.

Step 4. Develop methods of drawing Gantt or PERT type charts so that the course of pre-contract activities is clear and so that progress may be assessed.

The following continuing list briefly describes the steps of part two of the study and the final step to conclude both parts:

Step 5. Determine and define the purpose of monitoring activities carried out after award of the contract.

Step 6. Define the questioning, testing, and sampling of the contractor's facilities, procedures, nad plans as well as progress information during the production process.

Step 7. Define reporting procedures from contractor to monitor and monitor to program manager.

Step 8. Test the analysis by applying the framework to a specific past or present project.

Step 9. Write procedures which the center may use to produce instruction manuals.

4.0 STATEMENT OF WORK

25X1 [redacted] will conduct a study of the research and development effort to develop procedures for improving management control. The study will consist of the following tasks:

1. identify specific pre-contract and contract monitoring events,
2. develop methods for scheduling events & milestones,
3. define reporting procedures for management information,
4. prepare PERT or Gantt chart display method,
5. prepare procedures and instructional material for employment of methodology developed.

The results of the study will be presented in a final report, which shall incorporate the necessary procedures of task 5 above six months after date of award of a contract or clearance of personnel, whichever is the later.

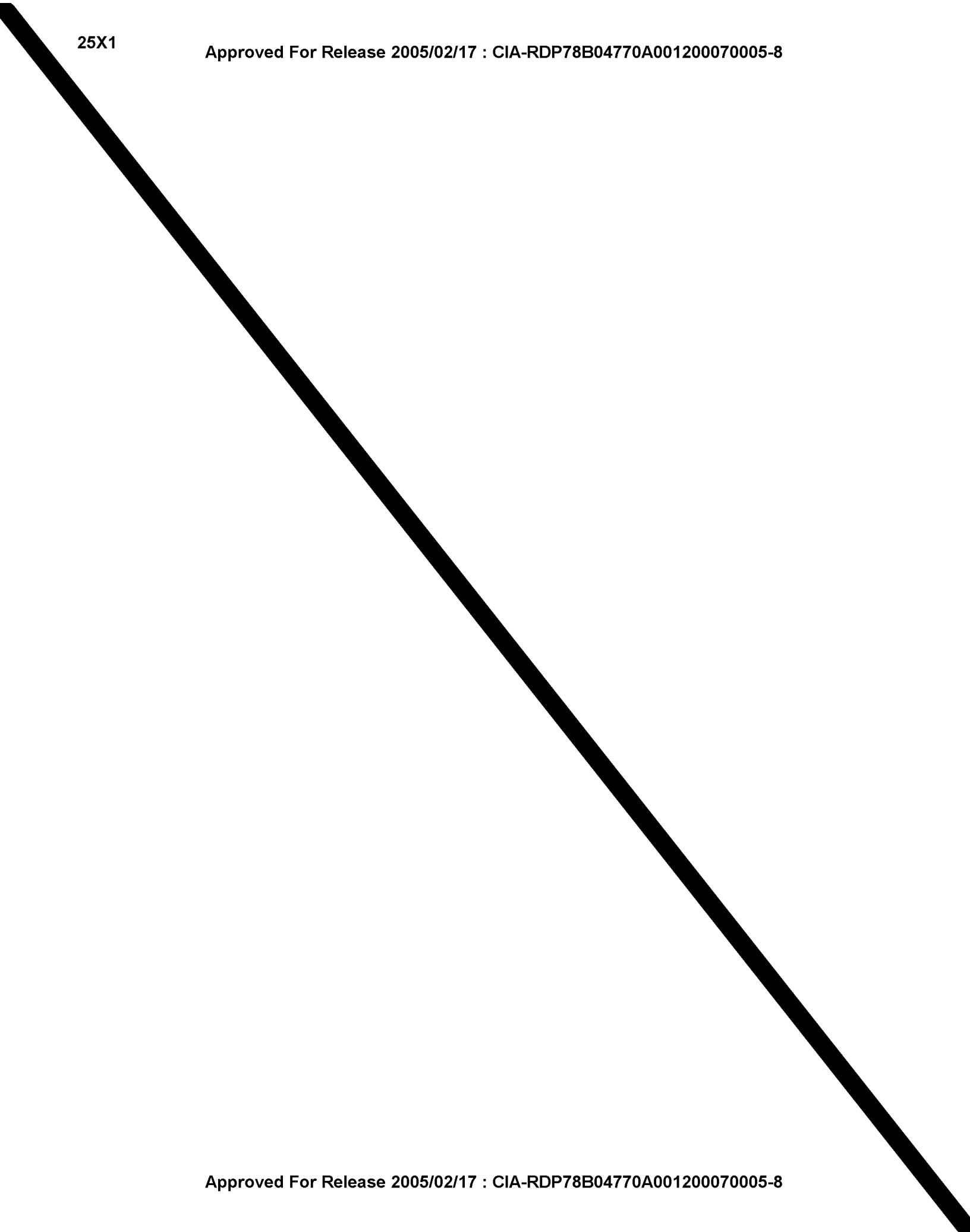
5.0 CAPABILITIES

25X1 [redacted] can provide the services of two senior analysts to perform the proposed study. Both are thoroughly familiar with the type of work proposed. In addition to their academic training and technical experience these individuals are, and have been, businessmen responsible for developing just the type of management control mechanisms proposed.

25X1 [redacted] is experienced in the practical application of operations research. As a founder and for many years Vice President of [redacted] 25X1 he was largely responsible for the development of the organization and management of the company. His responsibilities then included the preparation of methods for managing projects on time and within the funds.

25X1 [redacted] is experienced in the field of management information systems. Among his work applicable to the proposed study has been the integration of management information systems, the improvement of contract management procedures, and the preparation of a model for the prediction of R&D cost and time. He has taught courses in systems analysis and the application of PERT at Stanford University. He was one of the founders , and General Manager of his own business.

Biographical sketches of the two individuals are contained in Appendix A.



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APPENDIX A

Resumes of Project Personnel

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